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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/750,387	12/28/2000	David M. Hoffman	15-CT-5419	6352

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John S. Beulick
Armstrong & Teasdale LLP
Suite 2600
One Metropolitan Square
St. Louis, MO 63102-2740

EXAMINER

KAO, CHIH CHENG G

ART UNIT	PAPER NUMBER
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2882

DATE MAILED: 03/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/750,387

Applicant(s)

HOFFMAN, DAVID M.

Examiner

Chih-Cheng Glen Kao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 1 and 16 are objected to because of the following informalities, which appear to be minor draft errors creating grammatical and lack of antecedent basis problems.

In the following format (location of objection; suggestion for correction), the following respective suggestions may obviate the objections: (claim 1, line 8, “half detector segments separated by”; inserting - -are- - before “separated”) and (claim 16, line 2, “said radiation detector”; deleting “radiation” and inserting - -array- - after “detector”).

For purposes of examination, the claims have been treated as such. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-6, 9, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toth et al. (US Patent 5982846) in view of Oomori et al. (JP 03-259569) and Fujise (US Patent 4641328).

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3. Regarding claims 1 and 3, Toth et al. discloses a method of imaging and a radiation detector comprising the steps of scanning a body (Fig. 3, #22) with a computed tomographic imaging system (Title) having a radiation source (Fig. 3, #14) and detector (Fig. 3, #20) coupled to a rotating gantry (col. 1, lines 27-30), the detector array having a z-direction parallel to an axis of rotation of the gantry and an x-direction transverse to the z-direction (Fig. 3 and 4, #20), acquiring attenuation data (col. 1, lines 18-21) from a plurality of staggered half detector segments abutted in regions about a centerline (Fig. 4, #20) comprising a plurality of detector modules (Fig. 5) including a first type of detector module with cables extending into a gap (Fig. 5, #70), and reconstructing an image using the attenuated data (Fig. 2, #34).

However, Toth et al. does not disclose segments separated by a gap, wherein a plurality of staggered half detectors are abutted in regions about a centerline extending in the z-direction, nor imaging an organ.

Oomori et al. teaches segments separated by a gap, wherein a plurality of staggered half-detectors are abutted in regions about a centerline extending in the z-direction (Fig. 4, #5).

Fujise teaches imaging an organ (Abstract, lines 1-6).

It would have been obvious, to one of ordinary skill in the art at the time the invention was made, to have the method and device of Toth et al. with segments separated by a gap along a centerline in the z-direction of Oomori et al., since one would be motivated to incorporate this to enhance the concentration resolution as shown by Oomori et al. (Abstract, Purpose).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have the suggested method and device of Toth et al. in view of Oomori et al. with imaging of an organ of Fujise, since one would be motivated to image an organ to better

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see if there is anything wrong with it for more clinical information as implied from Fujise (col. 1, lines 14-23).

4. Regarding claim 4, Toth et al. further discloses detector segments comprising first and second modules having flexible cables extending in two and one directions (Fig. 5, #70).
5. Regarding claim 5, Toth et al. further discloses the first modules straddling the centerline in each half detector segment (Fig. 4 and 5).
6. Regarding claim 6, Toth et al. further discloses a pre-formed right angle bend (Fig. 5).
7. Regarding claim 9, Toth et al. further discloses detector segments comprising first and second modules having flexible cables extending in two and one directions (Fig. 5, #70) and a set of rails in front of the first type of module and behind the second type of module (Fig. 4).
8. Regarding claim 11, Toth et al. further discloses the removable modules (Fig. 5, #60).
9. Claims 2 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toth et al. in view of Oomori et al. and Fujise as applied to claims 1 and 4 above, and in further view of Cuppen (US Patent 6,259,766).

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10. Regarding claim 2, Toth et al. in view of Oomori et al. and Fujise suggest a method as recited above.

However, Toth et al. does not disclose acquiring data with different resolutions as a function of position in the x-direction.

Cuppen discloses acquiring data with different resolutions as a function of position in the x-direction (Fig. 3).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested method of Toth et al. in view of Oomori et al. and Fujise with the step of acquiring data with different resolutions of Cuppen, since one would be motivated to perform faster and more accurate volume reconstruction with a limited number of detector elements as shown by Cuppen (col. 1, lines 56-62).

11. Regarding claim 7, Toth et al. in view of Oomori et al. and Fujise suggest a device as recited above.

However, Toth et al. does not disclose different numbers of outputs per module as a function of location in the x-direction, which can be defined as higher and lower spatial resolution.

Cuppen teaches different numbers of outputs per module as a function of location in the x-direction (col. 5, lines 45-55), which can be defined as higher and lower spatial resolution.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested device of Toth et al. in view of Oomori et al. and Fujise with the different outputs of Cuppen, since one would be motivated to perform faster and

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more accurate volume reconstruction with a limited number of detector elements as shown by Cuppen (col. 1, lines 56-62).

12. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toth et al. in view of Oomori et al., Fujise, and Cuppen as applied to claim 7 above, and further in view of Hsieh (US Patent 5974109).

Toth et al. in view of Oomori et al., Fujise, and Cuppen suggest a device as recited above.

However, Toth et al. does not disclose paired cells.

Hsieh teaches paired cells (col. 2, lines 30-32).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have the suggested device of Toth et al. in view of Oomori et al., Fujise, and Cuppen with the paired cells of Hsieh, since one would be motivated to avoid having to make any significant hardware and software changes when adding cells in a multislice CT system as implied from Hsieh (col. 1, lines 51-67, col. 2, lines 1-9 and 24-37).

13. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toth et al. in view of Oomori et al. and Fujise, as applied to claim 9 above, and further in view of Hoffman et al. (US Patent 5799057).

Toth et al. in view of Oomori et al. and Fujise suggests a device as recited above.

However, Toth et al. does not disclose collimator plates extending in a z-direction and over first and second type modules.

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Hoffman et al. teaches collimator plates extending in a z-direction and over first and second type modules (Fig. 4, #62).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested device of Toth et al. in view of Oomori et al. and Fujise with the collimator plates of Hoffman et al., since one would be motivated to incorporate a collimator that is not complicated and cumbersome to construct, that effectively absorbs scattered x-rays, and that substantially prevents such x-rays from impinging the detector array as implied from Hoffman et al. (col.2, lines 49-55).

14. Claims 12-16, 18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toth et al. in view of Oomori et al., Fujise, Cuppen, and Gordon (US Patent 6188745).

For purposes of being concise, Toth et al. in view of Oomori et al., Fujise, and Cuppen suggest a device as recited above.

However, Toth et al. does not disclose using spatial resolution to reduce artifacts.

Gordon teaches using spatial resolution to reduce artifacts (col. 4, lines 12-30).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have the suggested device of Toth et al. in view of Oomori et al., Fujise, and Cuppen with the use of spatial resolution to reduce artifacts of Gordon, since one would be motivated to reduce artifacts to get better images as implied from Gordon (col. 4, lines 12-23).

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15. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toth et al. in view of Oomori et al. Fujise, Cuppen, and Gordon as applied to claim 16 above, and further in view of Hsieh.

Toth et al. in view of Oomori et al., Fujise, Cuppen, and Gordon suggest a device as recited above.

However, Toth et al. does not disclose paired cells.

Hsieh teaches paired cells (col. 2, lines 30-32).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have the suggested device of Toth et al. in view of Oomori et al., Fujise, Cuppen, and Gordon with the paired cells of Hsieh, since one would be motivated to avoid having to make any significant hardware and software changes when adding cells in a multislice CT system as implied from Hsieh (col. 1, lines 51-67, col. 2, lines 1-9 and 24-37).

16. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toth et al. in view of Oomori et al., Fujise, Cuppen, and Gordon, as applied to claim 12 above, and further in view of Hoffman et al.

Toth et al. in view of Oomori et al., Fujise, Cuppen, and Gordon suggest a device as recited above.

However, Toth et al. does not disclose collimator plates extending in a z-direction and over first and second type modules (Fig. 4, #62).

Hoffman et al. teaches collimator plates extending in a z-direction and over first and second type modules.

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It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the suggested device of Toth et al. in view of Oomori et al., Fujise, Cuppen, and Gordon with the collimator plates of Hoffman et al., since one would be motivated to incorporate a collimator that is not complicated and cumbersome to construct, that effectively absorbs scattered x-rays, and that substantially prevents such x-rays from impinging the detector array as implied from Hoffman et al. (col.2, lines 49-55).

Response to Arguments

17. Applicant's arguments filed 2/18/04 have been fully considered but they are not persuasive.

The crux of the Applicant's arguments is with regards to no disclosure or suggestion of a cable into a gap in the prior art. The Examiner asserts that this is suggested in the prior art with Toth et al. in view of Oomori et al. The cables (Fig. 5, #70) of Toth et al. must necessarily extend to a gap as it goes from one side adjacent to the detector face to behind the detector as exemplified in Figure 5. It is the only place the cable can go. Oomori et al. further teaches a gap between staggered half detector segments (Fig. 4). Thus, it would have been an obvious modification to extend the cables of Toth et al. into the gaps of Oomori et al, since there would be no other place for the cables of Toth et al. to go in with the modifications of Oomori et al.

Any further arguments with regards to prior art references not disclosing or suggesting various limitations have been addressed above.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

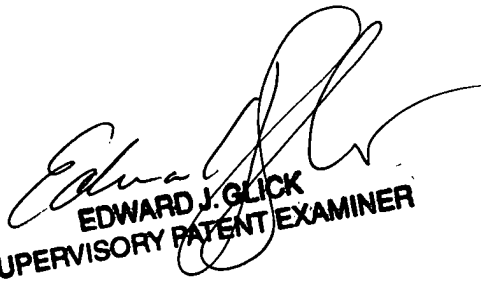
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER